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Research and Special Programs
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49 CFR Parts 171 and 173
Periodic Inspection and Testing of
Cylinders; Proposed Rule

DEPARTMENT OF TRANSPORTATION**Research and Special Programs Administration****49 CFR Parts 171 and 173**

[Docket No. HM-220A, Notice No. 95-13]

RIN 2137-AC59

Periodic Inspection and Testing of Cylinders**AGENCY:** Research and Special Programs Administration (RSPA), DOT.**ACTION:** Notice of Proposed Rulemaking (NPRM).

SUMMARY: RSPA proposes to amend the requirements contained in the Hazardous Materials Regulations pertaining to the maintenance and requalification of DOT specification and exemption cylinders used for transportation of compressed gases in commerce. The proposed changes would clarify current inspection and retest requirements, incorporate certain regulatory interpretations and add new provisions. The intent of the changes is to enhance public safety by providing greater guidance to persons who perform periodic inspection and testing of cylinders.

DATES: Comments must be received by December 15, 1995.

ADDRESSES: Address comments to Dockets Unit (DHM-30), Office of Hazardous Materials Safety, Research and Special Programs Administration, U.S. Department of Transportation, Washington, DC 20590-0001. Comments should identify the docket and notice number and be submitted, when possible, in five copies. Persons wishing to receive confirmation of receipt of their comments should include a self-addressed, stamped postcard. The Dockets Unit is located in Room 8421 of the Nassif Building, 400 Seventh Street SW, Washington DC 20590-0001. Office hours are 8:30 a.m. to 5:00 p.m., Monday through Friday, except on public holidays when the office is closed.

FOR FURTHER INFORMATION CONTACT: Theresa Gwynn or Hattie L. Mitchell, telephone (202) 366-4488, Office of Hazardous Materials Standards, Research and Special Programs Administration, Department of Transportation, 400 Seventh Street SW, Washington DC 20590-0001.

SUPPLEMENTARY INFORMATION:**I. Background**

The Federal hazardous material transportation law (Federal hazmat law), 49 U.S.C. 5101-5127, authorizes the

Secretary of Transportation to regulate the manufacture and continuing qualification of packagings (1) used to transport hazardous materials in commerce, or (2) certified under Federal hazmat law for the transportation of hazardous materials in commerce, whether or not actually used for that purpose. The Hazardous Materials Regulations (HMR), 49 CFR parts 171-180, contain requirements for periodic inspection and testing of cylinders subject to the Federal hazmat law, including the frequency and manner of inspection and testing, standards for cylinder rejection and condemnation, and cylinder marking and recordkeeping.

Federal authority to regulate the transportation of compressed gases originated in a 1921 amendment to the Transportation of Explosives Act, 35 Stat. 1135, § 233 (March 4, 1909). The amendment, at 41 Stat. 1445, § 233, authorized the Interstate Commerce Commission (ICC) to regulate the packing, marking, loading, handling and transportation of compressed gases by common carriers. Under this authority, in 1930 the ICC implemented regulations for periodic inspection and testing of cylinders; the regulations, as amended, were first published in the Federal Register on December 12, 1940 (5 FR 4908).

Ten years later, the regulations were codified into the Code of Federal Regulations (15 FR 8261; Dec. 2, 1950). In 1967, pursuant to the Department of Transportation Act, Pub. L. 89-670, 80 Stat. 931, regulatory jurisdiction over the packaging of dangerous articles for transportation was transferred from the ICC to the Department of Transportation; those sections governing cylinder inspection and testing were moved to their present location in 49 CFR 173.34 (32 FR 5606; April 5, 1967). The cited authority for the hazardous materials regulations is no longer the Transportation of Explosives Act but rather the Federal hazmat law. Federal hazmat jurisdiction extends beyond common carriers, to all transportation in commerce by highway, rail, air or water. Through rulemaking and the issuance of exemptions from the regulations under 49 CFR part 107, subpart B, aluminum and composite cylinders now are authorized for use in addition to steel. Nevertheless, apart from substitution of the "DOT" identifier for the "ICC" identifier, the present basic inspection and testing requirements, at § 173.34(e) (1)-(6) and related sections, largely are unchanged from the initial 1940 publication.

The regulations have been refined by interpretation in the process of

enforcement and in response to public inquiries. Thus, certain periodic inspection and testing requirements, such as those pertaining to standards for visual inspection, calibration of the retest apparatus, retest performance and recordkeeping, are not explicit in the HMR. RSPA has worked closely with the cylinder manufacturing and maintenance industries in developing interpretations consistent with sound industry practice and in communicating these interpretations to the regulated community. Nevertheless, RSPA inspections and inquiries have shown that the regulatory requirements are not sufficiently clear to some cylinder retesters. This raises concerns both about visual inspection and testing being conducted fully consistent with safe practices and, in enforcement, about fair notice of what the requirements are. Accordingly, RSPA proposes to revise the existing language to incorporate the RSPA interpretations and certain industry consensus standards and practices into the regulations.

Under Executive Order 12866 and the Regulatory Policies and Procedures of the Department of Transportation, 44 FR 11034, a regulatory evaluation comparing the public costs and benefits of alternative rulemaking actions must be prepared unless the rule has a minimal cost impact. Because the proposed changes would clarify the regulations as presently enforced, or incorporate new requirements that are consistent with industry practice, the cost impact of the rule is expected to be minimal. Therefore, RSPA has prepared no regulatory evaluation. RSPA invites comments on potential cost impacts it may not have considered. If comments indicate that costs of the rule would not be minimal, RSPA will prepare a regulatory evaluation.

II. Proposal**Section 173.34**

Revision of § 173.34(e) Heading. The proposed rule would revise the heading of paragraph (e) from "Periodic retesting, reinspection and marking of cylinders" to "Periodic qualification and marking of cylinders." RSPA believes this heading more clearly indicates the subject matter of the paragraph, and avoids redundancy. Further, it has been argued in at least one enforcement case involving the charging of foreign cylinders for export under § 173.301(j) that paragraph (j)(1), requiring "retesting" in compliance with § 173.34(e), is unenforceable when there is no evidence that the foreign cylinder previously has been "tested."

Revising the heading of paragraph (e) and amending § 173.301(j)(1) as proposed in this notice would eliminate misunderstandings of the testing requirement. This revision is for clarification, and would not change the scope of § 173.34(e).

Revision of Retest Table. Currently, requirements applicable to foreign cylinders are contained in two separate table entries. Under the proposed rule, the table entry prescribing the minimum retest pressure and a five-year retest period for "[a]ny cylinder with marked test pressure" would be removed and the entry for "[f]oreign cylinder charged for export" would be revised to specify a retest period of five-years. Comment is invited as to whether table entries are needed to specify retest pressure or frequency for any specification, exemption or special permit cylinder authorized for the transportation of hazardous material in commerce.

General Requirements and Retester Authorization. Current paragraph (e) of § 173.34 would be substantially revised. Proposed paragraph (e)(1) would set forth the general requirement that each DOT specification or exemption cylinder must be periodically inspected, tested and marked in accordance with § 173.34 by or under the supervision of a RSPA-authorized retester. It would prohibit use of a DOT specification or exemption cylinder that is required to be periodically inspected or tested for transportation of a hazardous material in commerce unless the cylinder is marked with an inspection or test date indicating that it is qualified for use. The procedure to obtain retester authorization, in the form of the retester identification number (RIN), and to renew the authorization would be specified in paragraph (e)(2).

Proposed paragraph (e)(2) would contain three new requirements. First, a retester's authority to mark a cylinder with a RIN and an inspection or test date would be contingent on the retester operating in compliance with the terms of the RIN issuance letter. Second, a retester would be required to inform RSPA in writing of any change in cylinder qualification personnel or testing equipment within 20 days. Presently, RSPA imposes these two requirements under the terms of the RIN issuance letter. Third, a retester would be required to maintain, at the facility, the relevant parts of 49 CFR, the current exemptions for all exemption cylinders inspected, retested or marked, and all Compressed Gas Association (CGA) pamphlets incorporated by reference in § 171.7 that apply to the retester's activities. It is RSPA's experience that retest facilities operating in accordance

with sound business practice maintain current copies of these materials.

As a hazmat employer, a retester is responsible for properly training any employee who performs cylinder requalification functions. This also applies to an employee of an independent inspection agency. Independent inspection agencies are not RSPA agents or representatives. Nothing in the regulations relieves either party from its obligation for ensuring compliance with the HMR.

Visual Inspection. Current paragraph (e) requires visual internal and external inspection in accordance with CGA Pamphlet C-6, "Standards for Visual Inspection of Compressed Gas Cylinders," which contains inspection standards for steel cylinders. This provision was enacted before DOT's approval of aluminum and composite cylinders for transportation of compressed gases and before CGA publication of inspection standards for aluminum and composite cylinders. RSPA proposes, in new paragraph (e)(3), to require inspection of aluminum and composite cylinders in accordance with CGA Pamphlet C-6.1 ("Standards for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders" (1995)), CGA Pamphlet C-6.3 ("Guidelines for Visual Inspection and Requalification of Low Pressure Aluminum Compressed Gas Cylinders" (1991)), and CGA Pamphlet C-6.2 ("Guidelines for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders" (1988)). These documents would be incorporated by reference in § 171.7. Proposed paragraph (e)(3) explicitly would require a retester to comply with cylinder approval, rejection and condemnation criteria set forth in CGA Pamphlet C-6, C-6.1, C-6.2 or C-6.3, as applicable. No new inspection requirements would be imposed.

Retesting. Proposed paragraph (e)(4) would prescribe procedures for cylinder volumetric pressure retesting, confirming system calibration, and standards for the accuracy and resolution of pressure/expansion test systems. The existing requirements would be clarified and several new provisions would be added.

Proposed paragraph (e)(4)(i) would establish that retest, unless otherwise provided in § 173.34(e), means testing by a method that measures a cylinder's total and permanent expansions at prescribed test pressure. While it is expected that nearly all retesting will be by internal pressurization of a cylinder suspended in a water jacket (i.e., hydrostatic retesting), a retester would be permitted to use other methods

meeting resolution and accuracy standards.

A strict reading of current paragraph (e)(3) can lead to misinterpretations of two key concepts: device accuracy (i.e., how truthfully the system displays, or records, the actual pressure or expansion being measured); and device resolution (i.e., the smallest incremental unit that a measuring instrument or system must be capable of being read to, or recorded from, so as to meet or exceed the measurement accuracy requirement). Pressure and expansion indicating devices are compared against a calibrated standard daily to check their accuracy. However, if the scale of the indicating device does not show the proper resolution, the accuracy of the reading is not assured. Currently, (e)(3) addresses expansion gauge accuracy, but not resolution, and pressure gauge resolution, but not accuracy. Proposed paragraph (e)(4)(ii) would set clear resolution standards for both pressure and expansion indicating devices, while paragraph (e)(4)(iii) would set clear accuracy standards for both.

First, proposed paragraph (e)(4)(ii) would require the pressure indicating device to have sufficient resolution to indicate the pressure to within 1% of the minimum prescribed test pressure of any cylinder retested (see example below). Second, the device for measuring cylinder expansion must have sufficient resolution to indicate expansion to within 1% of the total expansion of any cylinder retested. An exception would be retained for cylinders of less than 10 cubic centimeters total expansion, for which resolution to 0.1 cubic centimeter would be permitted. Finally, the paragraph would codify industry practice of midpoint interpolation to achieve the required degree of resolution.

For instance (in a system using pressure gauges), if a pressure gauge reads only in increments of 50 psi, and the minimum prescribed test pressure for a cylinder to be tested is 1000 psi, the gauge would show insufficient resolution to determine accuracy. A gauge of finer scale is needed. To achieve the required resolution, the gauge divisions should permit reading of pressures to within 1% of the cylinder's minimum prescribed test pressure (1% of 1000 psi = 10 psi). Since mid-point interpolation is permissible, a gauge of no greater than 20 psi increments can be used for this example (half of 20psi is 10psi, the required resolution).

Presently, paragraph (e)(3) specifies no calibration frequency to establish retest apparatus pressure and cylinder expansion accurately to plus or minus

one percent of true pressure and expansion values. CGA Pamphlet C-1 recommends that calibration be confirmed each day before retesting. RSPA's experience is that most retesters confirm calibration daily as a matter of sound operating practice. Proposed paragraph (e)(4)(iii), consistent with industry practice, would require daily confirmation of calibration before retesting to assure both expansion and pressure gauge accuracy. Comments are solicited on whether calibration is required more or less frequently, and whether, for example, it is appropriate to require a calibration check at the beginning of each shift (for those facilities operating more than one shift per day), for each change in retest operator, or at some other frequency.

A strict reading of current paragraph (e)(4) requires that system calibration has been demonstrated at each pressure at which a cylinder is retested. The retester's ability to control test pressure, however, is limited by pump characteristics, system idiosyncrasies, and residual cylinder expansion. Further, a calibrated cylinder may not be certified at each pressure at which a retester wishes to perform a hydrostatic test. For these reasons, RSPA is proposing, in paragraph (e)(4)(iii), to allow two means of demonstrating calibration. First, as at present, a retester may show calibration at test pressure. Alternatively, a retester, on a given day, simply may perform calibrated cylinder runs at pressures above and below test pressures for that day. A retester is not authorized to perform a hydrostatic test at a pressure above the highest pressure or below the lowest pressure at which the calibrated cylinder has demonstrated calibration on that day.

The calibration certificate for a calibrated cylinder establishes true total expansions at a range of pressures, generally at each 1000 pounds per square inch (psi). During system calibration, the operator must compare the system pressure or the total expansion reading with the actual reading on the calibration certificate for that pressure or total expansion. Proposed paragraph (e)(4)(iv) would require retesters to maintain calibrated cylinder certificates, as is current industry practice.

Proposed new paragraph (e)(4)(v) would restate existing requirements for cylinder retesting, including the requirement to hold minimum test pressure for at least 30 seconds and as long as necessary for full cylinder expansion and the prohibition on pressurizing a cylinder above 90 percent of test pressure before a retest. As under current regulations, when the system

apparatus fails to hold pressure after test pressure has been reached, retest is authorized at a pressure increased by 10 percent or 100 psi, whichever is less. Language would be added to emphasize that a second retest is authorized only if the apparatus has failed to hold test pressure, and not if a cylinder has exhibited excessive expansion. RSPA also is considering: (1) Specifying the period of time a retester must wait before retest, after applying more than 90 percent of test pressure; (2) limiting the number of permissible retests after apparatus failure; and (3) specifying a standard for condemnation in the event of overpressurization. Comments are specifically invited on these issues.

Cylinder Rejection/Condemnation. Proposed paragraphs (e)(5) and (e)(6) would contain requirements for rejection and condemnation of cylinders.

A "rejected cylinder" is one that is determined by visual examination to be not in proper condition to be presented or used as a specification packaging for the transportation of hazardous material, but that is authorized to be repaired or rebuilt. The current regulations incorporate rejection and repair standards of CGA Pamphlet C-6 through paragraph (e)(1), which requires inspection in accordance with that pamphlet. The proposed rule would create a separate paragraph defining "rejection" and explicitly incorporating the rejection criteria of CGA Pamphlets C-6, C-6.1, C-6.2, and C-6.3 for steel, aluminum and composite cylinders, as applicable. A provision, contained in current paragraph (e)(4), stating that a cylinder condemned for excessive permanent expansion on retest may be requalified by reheat treatment would be removed. Requalifying cylinders by reheat treatment is often not practical or consistent with common industry practice.

A condemned cylinder is one that may not be presented or used as a specification packaging for transportation of hazardous materials, and for which requalification is not authorized. Under the current regulations, a cylinder must be condemned if: (1) It meets a CGA Pamphlet C-6 criterion for condemnation on visual inspection; (2) it exceeds permissible permanent expansion on retest and is not authorized for reheat treatment; (3) it leaks or evidences damage indicating that it is likely to be weakened appreciably and is not authorized for repair or rebuilding; (4) for an exemption cylinder, it meets another condemnation criterion specified in the exemption; or (5) for a DOT 3HT

cylinder governed by paragraph (e)(13), elastic expansion exceeds the marked rejection elastic expansion.

For both rejected and condemned cylinders, proposed paragraphs (e)(5)(ii) and (e)(6)(ii) would require the retester to notify the cylinder owner in writing of the cylinder's status, prescribed remedial actions that can be taken (in the case of a rejected cylinder), and that the cylinder may not be used as a specification packaging for the movement of hazardous materials. Requiring written notification would offer greater assurance that cylinder owners are made aware of potentially unsafe cylinders.

The proposed rule would not change the present condemnation standards, except for explicitly adding evidence of cracking as a basis to condemn a cylinder. To add assurance that a condemned cylinder will not be returned to service, the retester would stamp a series of X's over the DOT specification number and service pressure or the word "CONDEMNED" on the shoulder, top head, or neck of the cylinder using a steel stamp. The retester would not be required to stamp the cylinder if, on the direction of the owner, the retester rendered the cylinder incapable of holding pressure in some fashion (e.g., by damaging the cylinder threads or drilling through the cylinder wall).

Comments are particularly invited on the proposed requirements to stamp condemned cylinders. RSPA wishes to gain additional information on present retester practices of handling rejected and condemned cylinders, the costs and benefits of the requirements, the need for the requirements, their effect on retester operating practices, and alternatives to ensure that rejected and condemned cylinders are removed from hazardous material service where use of a specification packaging is required.

Recordkeeping. Current paragraph (e)(5) states that "[r]ecords showing the result of reinspection and retest must be kept." RSPA has applied this regulation to require that the retester, for each cylinder inspected or tested, record the information necessary to confirm that the retest was conducted under the required conditions (i.e., at correct test pressure), indicate the results of inspection and retest, and enable the results to be traced to the cylinder inspected or tested. Specifically, the records must identify the cylinder, date, results of visual examination, test pressure, test results (including expansion data) and cylinder disposition. To identify the cylinder, RSPA has required, consistent with CGA Pamphlet C-1, that retesters record

the cylinder specification or exemption number, the service pressure, the serial number and the cylinder owner. To RSPA's knowledge, most retesters use retest sheets containing these entries and record this information as standard operating practice. Nevertheless, prescribing explicitly the information required to be in test records should benefit retesters and improve recordkeeping practices.

RSPA proposes to require the retest record to contain those entries presently required, as well as the cylinder manufacturer's name or symbol, cylinder dimensions and identification of the retest operator. For cylinders qualified for overfill by a plus (+) marking, the retest record must indicate the method by which wall stress computations pursuant to § 173.302(c) were made. This notation may be entered in the "Remarks" column of the retest sheet. The rule explicitly would require recordation of tests not completed due to failure of the apparatus to hold test pressure. The record for a subsequent test would be required to include the date of the earlier test. This information also could be entered in the "Remarks" column on the retest sheet.

CGA Pamphlet C-1 recommends that retesters record calibrated cylinder expansions used to confirm retest apparatus calibration. In RSPA's experience, most retesters record these expansions, even though not required by the current regulations. If calibration checks are not recorded, a retester, particularly if it employs more than one retest operator during a shift or an operating day, has no means of ensuring apparatus calibration before testing or confirming that the apparatus was accurate on any given day. The proposed rule would require that calibration runs be recorded, in chronological order, with retest records for that day.

A retester who marks a cylinder for overfill under the conditions of § 173.302(c) would be required to retain records of wall stress computations. Wall stress may be determined through a method that does not require computation, such as the use of an elastic expansion limit provided by the cylinder manufacturer. This provision would not limit the retester in its choice of method, but simply require that the method be noted and computations, if required by the method used, be retained.

Finally, proposed paragraph (e)(8) would require each retester to maintain at its facility its RIN issuance letter from RSPA; a copy of the renewal application, if renewal is pending;

copies of notifications to RSPA since issuance of the most recent RIN letter of changes in equipment or personnel; and most recent certificates of calibration for all calibrated cylinders. Currently, the RIN issuance letter contains a requirement that the letter be posted at the retest facility. RSPA believes that maintenance of the other documents is standard retester operating practice and that, in any event, the cost of doing so is insignificant. RSPA invites comments on these conclusions.

Section 173.301

Foreign Cylinders for Export. Under the present regulations, a foreign cylinder not manufactured, inspected, tested and marked in accordance with part 178 may be filled in the United States only for export. Further, the cylinder may be filled for export only if it is marked as having been, and has been, inspected and retested in compliance with § 173.34(e), and it meets maximum filling density and service pressure requirements. This marking would not contain the RIN, only the month and year of the test. Section 173.301(j) would be revised in minor respects to clarify these requirements.

Section 173.302

Computing Wall Stress for Overfill Authorization. Currently, § 173.302(c) permits filling of DOT 3A, 3AX, 3AA, 3AAX and 3T cylinders to 110 percent of marked service pressure under prescribed conditions. One condition for overfill, at paragraph (c)(3), is that neither the average nor the maximum wall stress in the cylinder, at test pressure, exceeds the applicable value stated in that paragraph. The proposed rule would amend paragraph (c)(3) in three respects. First, it would clarify the existing requirement that neither average nor maximum wall stress may exceed the specified value. Second, it would amend Note 1 to paragraph (c)(3) to explicitly authorize the existing industry practice of using the experimental K factor obtained from CGA Pamphlet C-5 to compute average wall stress. Third, it would add a Note 3 to explicitly authorize the industry practice of ensuring compliance with the wall stress limitations of paragraph (c)(3) by computing an elastic expansion rejection limit and comparing elastic expansion derived during retest. Comments are invited on whether other methods that may not presently be authorized by paragraph (c)(3) may be used to compute accurately the average or maximum wall stress.

Section 173.309

Retest requirements for fire extinguishers. Paragraph (b) provides for DOT specification cylinders used as fire extinguishers. Cylinders containing certain fire extinguishing agents such as ammonium phosphate, sodium bicarbonate, potassium bicarbonate, potassium imido dicarboxamide and bromochlorodifluoromethane or bromotrifluoromethane, which are commercially free from corroding components and meeting certain conditions, are authorized to meet a longer retest interval in accordance with current § 173.34(e)(18). The Fire Equipment Manufacturers' Association, Inc. (FEMAI) petitioned (P-1216) RSPA to move the conditions for extending the retest interval from § 173.309 to § 173.34(e)(18). FEMAI stated that this change would clarify that carbon dioxide fire extinguishers do not qualify for the special retest provisions in § 173.34(e)(18). RSPA agrees with FEMAI that these changes should be made. In this proposed rule, the retest criteria for these cylinders are revised and moved to proposed § 173.34(e)(21).

Revised § 173.309(b) would prescribe specification cylinders authorized for transportation under the proper shipping name "fire extinguishers." In a different petition (P-1217), FEMAI stated that DOT 3E cylinders are used as fire extinguishers and requested that this specification be added. RSPA agrees and proposes to include the DOT 3E specification in § 173.309(b). Also in this paragraph, RSPA proposes to remove a limitation on the dew point for the expellant gas, which is not a requirement under § 173.309(a) for gases in non-specification cylinders used as fire extinguishers.

Parts 171 and 173

Miscellaneous Technical Revisions. The proposed rule would amend several other regulations for update and for purposes of clarity only. In § 171.7, several CGA standards incorporated by reference would be updated: CGA Pamphlet C-6, "Standards for Visual Inspection of Steel Compressed Gas Cylinders" would be updated from the 1984 to the 1993 edition; CGA Pamphlet C-12, "Qualification Procedure for Acetylene Cylinder Design" would be updated from the 1979 to the 1994 edition; CGA Pamphlet C-13, "Guidelines for Periodic Visual Inspection and Requalification of Acetylene Cylinders" would be updated from the 1985 to the 1992 edition (responds to P-1241); and CGA Pamphlet S-1.1.1, Pressure Relief Device Standards—Part 1—Cylinders for

Compressed Gases," would be updated from the 1989 to the 1994 edition (responds to P-1247). With regard to the 1994 edition of CGA Pamphlet S-1.1.1, new paragraph 9.1.1.1 of the pamphlet, which specifies the replacement or requalification of pressure relief valves, on affected DOT cylinders every 10 years, would not be made mandatory. The National Propane Gas Association submitted comments on petition P-1247 stating that the propane industry has experienced no problems with these pressure relief valves on cylinders and that adoption of the provision is unwarranted. Although replacement of pressure relief valves on a periodic basis would not be required under § 173.34(d) of this proposed rulemaking, RSPA encourages this practice by industry.

In § 173.23, paragraphs (c), (d) and (e) would be revised to clarify that the requirement to remark as "3AL" certain aluminum cylinders manufactured under exemption before the existence of the DOT 3AL specification applies to cylinders manufactured under both the listed exemptions and the "special permits" that preceded those exemptions.

In § 173.34, paragraphs (e) (2), (8), (10), (13) and (15) would be revised for clarity only. A number of other revisions would be made throughout paragraph (e) for minor editorial clarification, to correct cross-references within the section as amended, and to include references to the newly incorporated CGA Pamphlets C-5, C-6, C-6.1, C-6.2 and C-6.3. Subparagraph numbering within paragraph (e) would change generally as a result of the restructuring of the paragraph under this rule.

Future rulemaking action. RSPA plans to clarify certain other requirements applicable to cylinders in a separate rulemaking action in the near future. In that notice, RSPA will propose the revision and reorganization of the cylinder specifications in Part 178. In addition, all requirements applicable to the inspection, retest, repair and continuing requalification of cylinders would be relocated from § 173.34 to subpart C of part 180.

III. Rulemaking Analyses and Notices

1. Executive Order 12866 and DOT Regulatory Policies and Procedures

This proposed rule is not considered a significant regulatory action under section 3(f) of Executive Order 12866 and was not reviewed by the Office of Management and Budget. The rule is not considered significant under the Regulatory Policies and Procedures of the Department of Transportation (44 FR

11034). The economic impact of this proposed rule is minimal to the extent that preparation of a regulatory evaluation is not warranted.

2. Executive Order 12612

This proposed rule has been analyzed in accordance with the principles and criteria contained in Executive Order 12612 ("Federalism"). Federal law expressly preempts State, local, and Indian tribe requirements applicable to the transportation of hazardous material that cover certain subjects and are not "substantively the same" as the Federal requirements. 49 U.S.C. 5125(b)(1). These covered subjects are:

(A) The designation, description, and classification of hazardous material;

(B) The packing, repacking, handling, labeling, marking, and placarding of hazardous material;

(C) The preparation, execution, and use of shipping documents related to hazardous material and requirements respecting the number, contents, and placement of those documents;

(D) The written notification, recording, and reporting of the unintentional release in transportation of hazardous material; and

(E) The design, manufacturing, fabricating, marking, maintenance, reconditioning, repairing, or testing of a packaging or a container which is represented, marked, certified, or sold as qualified for use in transporting hazardous material.

This notice of proposed rulemaking addresses the maintenance and testing of a package represented as qualified for use in the transportation of hazardous material. Therefore, the rule would preempt State, local and Indian tribe requirements that are not "substantively the same" as Federal requirements on these subjects. Section 5125(b)(2) of Title 49 U.S.C. provides that when DOT issues a regulation concerning any of the covered subjects after November 16, 1990, DOT must determine and publish in the Federal Register the effective date of Federal preemption. The effective date may not be earlier than the 90th day following the date of issuance of the final rule and no later than two years after the date of issuance. RSPA has determined that the effective date of Federal preemption of this final rule will be 90 days after publication in the Federal Register. Because RSPA lacks discretion in this area, preparation of a federalism assessment is not warranted.

3. Regulatory Flexibility Act

I certify that this proposed rule will not have a significant economic impact on a substantial number of small entities. This rule applies to persons

who inspect, retest and certify cylinders used to transport hazardous materials. These persons include a number of small businesses; however, the economic impact on any small business affected by the rule is expected to be minimal. There are no direct or indirect adverse economic impacts for small units of government or other organizations.

4. Paperwork Reduction Act

Information collection and recordkeeping requirements in current § 173.34 pertaining to cylinder retesters have been approved by the Office of Management and Budget (OMB) under the provisions of 44 U.S.C. chapter 35 and assigned control number 2137-0022. Because this proposed rule requires no substantive change from the current burden hours required, RSPA has not resubmitted the proposed information collection requirements to OMB for approval under the Paperwork Reduction Act. RSPA invites comments on any incremental paperwork burdens that it may not have considered. If deemed necessary, the burden hours will be revised to reflect the new requirements of this proposed rule and the information collection will be submitted to OMB for approval under the Paperwork Reduction Act.

5. Regulation Identifier Number

A regulation identifier number is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The regulation identifier number contained in the heading of this document can be used to cross-reference this action with the Unified Agenda.

List of Subjects

49 CFR Part 171

Exports, Hazardous materials transportation, Hazardous waste, Imports, Incorporation by reference, Reporting and recordkeeping requirements.

49 CFR Part 173

Hazardous materials transportation, Packaging and containers, Radioactive materials, Reporting and recordkeeping requirements, Uranium.

In consideration of the foregoing, 49 CFR parts 171 and 173 would be amended as follows:

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

1. The authority citation for Part 171 would continue to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

2. In § 171.7, in the Table in paragraph (a)(3), under the entry

Compressed Gas Association, Inc., the entries for CGA Pamphlets C–6, C–12, C–13, and S–1.1 would be revised and four new entries would be added in numerical order, to read as follows:

§ 171.7 Reference material.

(a) * * *

(3) *Table of material incorporated by reference.* * * *

Source and name of material						49 CFR reference
*	*	*	*	*	*	*
Compressed Gas Association, Inc.,						
*	*	*	*	*	*	*
CGA Pamphlet C–5, Cylinder Service Life—Seamless Steel High Pressure Cylinders, 1991						173.302
CGA Pamphlet C–6, Standards for Visual Inspection of Steel Compressed Gas Cylinders, 1993						173.34
CGA Pamphlet C–6.1, Standards for Visual Inspection of High Pressure Aluminum Compressed Gas Cylinders, 1995						173.34
CGA Pamphlet C–6.2, Guidelines for Visual Inspection and Requalification of Fiber Reinforced High Pressure Cylinders, 1988						173.34
CGA Pamphlet C–6.3, Guidelines for Visual Inspection and Requalification of Low Pressure Aluminum Compressed Gas Cylinders, 1991						173.34
*	*	*	*	*	*	*
CGA Pamphlet C–12, Qualification Procedure for Acetylene Cylinder Design, 1994						173.303
CGA Pamphlet C–13, Guidelines for Periodic Visual Inspection and Requalification of Acetylene Cylinders, 1992						173.34
*	*	*	*	*	*	*
CGA Pamphlet S–1.1., Pressure Relief Device Standards—Part 1—Cylinders for Compressed Gases, 1994						173.34
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PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

3. The authority citation for Part 173 would continue to read as follows:

Authority: 49 U.S.C. 5101–5127; 49 CFR 1.53.

4. In § 173.23, paragraphs (c), (d), and (e) would be revised to read as follows:

§ 173.23 Previously authorized packaging.

* * * * *

(c) After July 2, 1982, a seamless aluminum cylinder manufactured in conformance with and for use under DOT special permit (SP) or exemption (E) 6498, 7042, 8107, 8364 or 8422 may be continued in use if marked before or at the time of the next retest with either the specification identification “3AL” immediately above the special permit or exemption number, or the DOT mark (e.g., DOT 3AL 1800) added in

proximity to the special permit or exemption marking.

(d) Cylinders (spheres) manufactured and marked under DOT special permit (SP) or exemption (E) 6616 prior to January 1, 1983, may be continued in use if marked before or at the time of the next retest with the specification identification “4BA” near the special permit or exemption marking.

(e) After October 1, 1984, cylinders manufactured for use under special permit (SP) or exemption (E) 6668 or 8404 may be continued in use, and must be marked “DOT–4LXXXXYY” (XXX to be replaced by the service pressure, YY to be replaced by the letters “AL”, if applicable) in compliance with Specification 4L (§ 178.57 of this subchapter) on or before January 1, 1986. The “DOT–4LXXXXYY” must appear in proximity to other required special permit or exemption markings.

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5. In § 173.34, a parenthetical would be added immediately following the

first sentence of the introductory text of paragraph (d), the first sentence of paragraph (d) would be republished, and paragraph (e) would be revised to read as follows:

§ 173.34 Qualification, maintenance and use of cylinders.

* * * * *

(d) *Pressure relief device systems.* No person may offer a cylinder charged with a compressed gas for transportation unless the cylinder is equipped with one or more pressure relief devices sized and selected as to type, location, and quantity and tested in accordance with CGA Pamphlet S–1.1. (Compliance with paragraph 9.1.1.1 of CGA Pamphlet S–1.1 is permissive). * * *

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(e) *Periodic qualification and marking of cylinders.* Each cylinder that becomes due for periodic retest as specified in the following table must be retested and marked in conformance with the requirements of this paragraph:

RETEST AND INSPECTION OF CYLINDERS

Specification under which cylinder was made	Minimum retest pressure (p.s.i.)	Retest period (years)
DOT–3	3,000 p.s.i.	5.
DOT–3A, 3AA	5/3 times service pressure, except noncorrosive service (see § 173.34(e)(10)).	5 or 10 (see § 173.34(e)(11), (e)(14), (e)(15) and (e)(18)).
DOT–3AL	5/3 times service pressure	5.
DOT–3AX, 3AAX	5/3 times service pressure	5.
3B, 3BN	2 times service pressure (see § 173.34(e)(10))	5 or 10 (see § 173.34(e)(14)).
3C	Retest not required	
3D	5/3 times service pressure	5.
3E	Retest not required	
3HT	5/3 times service pressure	3 (see § 173.34(e)(13)).

RETEST AND INSPECTION OF CYLINDERS—Continued

Specification under which cylinder was made	Minimum retest pressure (p.s.i.)	Retest period (years)
3T	5/3 times service pressure	5.
4	700 p.s.i.	10.
4A	5/3 times service pressure (see § 173.34(e)(10)).	5 or 10 (see § 173.34(e)(14)).
4AA480	2 times service pressure (see § 173.34(e)(10))	5 or 10 (see § 173.34(e)(11)).
4B, 4BA, 4BW, 4B-240ET	2 times service pressure, except non-corrosive service (see § 173.34(e)(10)).	5 or 10 (see § 173.34(e)(9), (e)(14) and (e)(18)).
4C	Retest not required	
4D, 4DA, 4DS	2 times service pressure	5.
DOT-4E	2 times service pressure, except non-corrosive service (see § 173.34(e)(10)).	5.
4L	Retest not required	
8, 8AL		10 or 20 (See § 173.34(e)(17)).
DOT-9	400 p.s.i. (maximum 600 p.s.i.)	5.
25	500 p.s.i.	5.
26 for filling at over 450 p.s.i.	5/3 times service pressure	5.
26 for filling at 450 p.s.i. and below	2 times service pressure, except non-corrosive service (see § 173.34(e)(10)).	5 or 10 (see § 173.34(e)(9)).
33	800 p.s.i.	5.
38	500 p.s.i.	5.
Foreign cylinder (see § 173.301(j) for restrictions on use).	As marked on the cylinder, but not less than 5/3 of any service or working pressure marking.	5.

NOTE 1: For cylinders not marked with a service pressure, see § 173.301(e)(1).

(1) *General requirements.* (i) Each cylinder bearing a DOT specification marking (including a cylinder remarked in conformance with § 173.23) must be inspected, retested and marked in conformance with this section, at the frequency specified in the Retest and Inspection of Cylinders Table in this paragraph (e). Each cylinder bearing a DOT exemption number must be inspected, retested and marked in conformance with this section and the terms of the applicable exemption, at the frequency specified in the exemption.

(ii) No cylinder required by paragraph (e)(1)(i) of this section to be retested may be used for the transportation of a hazardous material in commerce unless that cylinder has been inspected and retested in accordance with this section and the retester has marked the cylinder by stamping the date of retest, the cylinder retester identification number (RIN) unless excepted under this section, and any other marking required by this section. No person may mark a test date or RIN on a DOT specification or exemption cylinder unless all applicable requirements of this section have been met.

(2) *Retester authorization.* (i) No person may mark a cylinder with a test date or RIN, or otherwise represent that a DOT specification or exemption cylinder has been retested under this section, unless that person holds a current RIN issued by RSPA and operates in compliance with the terms of the RIN issuance letter. All functions under this section shall be performed or

supervised by an individual named as qualified in the RIN application or a notification pursuant to paragraph (e)(2)(iv) of this section.

(ii) Any person seeking approval as a cylinder retester shall apply to an independent inspection agency, approved by RSPA pursuant to § 173.300a, for inspection of its retest facility. The applicant shall bear the cost of the inspection. Independent inspection agencies are not RSPA agents or representatives. A list of approved independent inspection agencies is available from the Associate Administrator for Hazardous Materials Safety, Office of Hazardous Materials Exemptions and Approvals (DHM-32), Research and Special Programs Administration, U.S. Department of Transportation, Washington, DC 20590-0001.

(A) After the inspection, the person seeking approval must submit a letter of recommendation and inspection report from the independent inspection agency and a completed approval application to the Associate Administrator.

(B) The Associate Administrator reviews the application, the inspection report and recommendation submitted by the independent inspection agency, and other available information. The Associate Administrator issues a RIN if it finds that the applicant's facility and qualifications are adequate to properly inspect, test and mark cylinders under this section. Unless otherwise provided in the RIN issuance letter, a RIN expires five years from the date of issuance.

(iii) The retester shall apply for RIN renewal in a timely manner. An inspection report and a recommendation of an independent inspection agency are required for renewal. If the Associate Administrator receives a renewal application at least 50 days before expiration of the RIN, the RIN will remain in effect until the Associate Administrator issues the renewal or notifies the retester that the RIN will not be reissued. The Associate Administrator renews a RIN in accordance with the standard in paragraph (e)(2)(ii)(B) of this section.

(iv) A current RIN remains valid provided the retester's facility and qualifications are maintained at or above the level observed at the time of inspection by the independent inspection agency. The RIN holder shall report in writing any change in name, address, ownership or management of the holder; personnel performing any function under this section; or testing equipment to the Associate Administrator for Hazardous Materials Safety (DHM-32) within 20 days of the change.

(v) A retester shall maintain, at each location at which it inspects, retests or marks cylinders under this section, current copies of:

(A) Those portions of Parts 171-180 of this subchapter that apply to its cylinder inspection, retesting and marking activities at that location.

(B) All exemptions governing exemption cylinders inspected, retested or marked by the retester at that location.

(C) Each CGA publication incorporated by reference in § 171.7 of this subchapter that applies to the retester's cylinder inspection, retesting and marking activities at that location. The publication maintained shall be the edition incorporated by reference in § 171.7 of this subchapter.

(3) *Visual inspection.* Except as otherwise provided in this section, a cylinder must be visually inspected, internally and externally, in accordance with the terms of CGA Pamphlets C-6, C-6.1, C-6.2, or C-6.3, as applicable. The cylinder must be approved, rejected or condemned according to the criteria set forth in the applicable CGA pamphlet. Internal inspection may be omitted for cylinders of the type and in the service described under paragraphs (e) (12) and (13) of this section. DOT 3BN cylinders must be inspected in accordance with CGA Pamphlet C-6.

(4) *Pressure retest.* (i) Each cylinder required to be retested under this section, unless otherwise provided, must be retested by means suitable for measuring the expansion of the cylinder under pressure. Bands and other removable attachments must be loosened or removed before testing so that the cylinder is free to expand in all directions.

(ii) The pressure indicating device of the testing apparatus must permit reading of pressures to within 1% of the minimum prescribed test pressure of each cylinder tested, except that for analog devices, interpolation to 1/2 of the marked gauge divisions is acceptable. The expansion indicating device of the testing apparatus must also permit incremental reading of the cylinder expansion to 1% of the total expansion of each cylinder tested or 0.1 cubic centimeter, whichever is larger. Midpoint visual interpolation is permitted.

(iii) Each day before retesting, the retester shall confirm, by using a calibrated cylinder or other method authorized in writing by the Associate Administrator for Hazardous Materials Safety (DHM-32), that:

(A) The pressure indicating device, as part of the retest apparatus, is accurate within $\pm 1.0\%$ of the prescribed test pressure of any cylinder tested that day. The pressure indicating device, itself, must be certified as having an accuracy of $\pm 0.5\%$, or better, of its full range, and must permit readings of pressure from 90%–120% of the minimum prescribed test pressure of the cylinder to be tested. The accuracy of the pressure indicating device within the test system can be demonstrated at any point within 500 psi of the actual test pressure for test pressures at or above 3000 psi, or 10%

of the actual test pressure for test pressures below 3000 psi; and

(B) The expansion indicating device, as part of the retest apparatus, gives a stable reading of expansion and is accurate to $\pm 1.0\%$ of the total expansion of any cylinder tested or 0.1 cubic centimeter, whichever is larger. The expansion indicating device, itself, must have an accuracy of $\pm 0.5\%$, or better, of its full scale.

(iv) The test equipment used must be calibrated to within $\pm 1.0\%$ of the calibrated cylinder's pressure and corresponding expansion values. This can be accomplished by bringing the pressure to a value shown on the calibration certificate for the calibrated cylinder used and verifying that the resulting total expansion is within $\pm 1.0\%$ of the total expansion shown on the calibration certificate. Alternatively, calibration may be demonstrated by bringing the total expansion to a known value on the calibration certificate for the calibrated cylinder used and verifying that the resulting pressure is within $\pm 1.0\%$ of the pressure shown on the calibration certificate. The calibrated cylinder must show no permanent expansion. The retester shall be able to demonstrate calibration in conformance with this paragraph (e)(4) to an authorized RSPA inspector on any day that it retests cylinders. A retester shall maintain calibrated cylinder certificates in conformance with paragraph (e)(8)(iii) of this section.

(v) Minimum test pressure must be maintained for at least 30 seconds, and as long as necessary for complete expansion of the cylinder. A system check may be performed at or below 90% of test pressure prior to the retest. In the case of a malfunction of the test equipment, the test may be repeated at a pressure increased by 10 percent or 100 psi, whichever is less. This paragraph (e)(4) does not authorize retest of a cylinder otherwise required to be condemned under paragraph (e)(6) of this section.

(5) *Cylinder rejection.* (i) A retester shall reject a cylinder when on visual inspection, it meets a rejection standard set forth in CGA Pamphlets C-6, C-6.1, C-6.2, or C-6.3, as applicable.

(ii) A cylinder that is rejected may not be marked as meeting the requirements of this section. The retester shall notify the cylinder owner, in writing, that the cylinder, unless requalified, reinspected and retested in conformance with CGA Pamphlets C-6, C-6.1, C-6.2, or C-6.3, as applicable, Part 173 of this subchapter, and any applicable exemption, is rejected and may not be filled with hazardous material for

transportation in commerce where use of a specification packaging is required.

(6) *Cylinder condemnation.* (i) A cylinder must be condemned when:

(A) On inspection, it meets a condition for condemnation set forth in CGA Pamphlets C-6, C-6.1, C-6.2, or C-6.3, as applicable;

(B) The cylinder leaks through its wall;

(C) Evidence of cracking exists to the extent that the cylinder is likely to be weakened appreciably;

(D) For a DOT specification cylinder other than a DOT 4E aluminum cylinder, permanent expansion exceeds 10 percent of total expansion;

(E) For a DOT 4E aluminum cylinder, permanent expansion exceeds 12 percent of total expansion;

(F) For a DOT exemption cylinder, permanent expansion exceeds the limit set forth in the applicable exemption, or the cylinder meets another criterion for condemnation in the applicable exemption; or

(G) For a DOT specification 3HT cylinder, elastic expansion exceeds the marked rejection elastic expansion.

(ii) A cylinder that is condemned may not be filled with hazardous material for transportation in commerce where use of a specification packaging is required and may not be marked as meeting the requirements of this section or any DOT exemption. When a cylinder is required to be condemned, the retester must stamp a series of X's over the DOT specification number and marked service pressure, must stamp "CONDEMNED" on the shoulder, top head, or neck using a steel stamp and must notify the cylinder owner, in writing, that the cylinder is condemned and may not be filled with hazardous material for transportation in commerce where use of a specification packaging is required. Alternatively, at the direction of the owner, the retester may render the cylinder incapable of holding pressure. No person may remove or obliterate the "CONDEMNED" marking.

(7) *Retester markings.* (i) Each cylinder passing retest must be marked with the retester's RIN set in a square pattern, between the month and year of the retest date, in characters not less than 1/8-inch high. The first character of the RIN must occupy the upper left corner of the square pattern; the second in the upper right; the third in the lower right, and the fourth in the lower left. Example: A cylinder retested in May 1984, and approved by a retester who has been issued identification number A123, would be marked plainly and permanently into the metal of the cylinder in accordance with location requirements of the cylinder

specification or on a metal plate permanently secured to the cylinder in accordance with paragraph (c) of this section:

A 1
5 84
3 2

(ii) Markings of previous tests may not be obliterated. Cylinders that are subject to the requirements of paragraphs (e)(11), (12) (modified hydrostatic test only), (13) or (14) of this section, or the requirements of § 173.301(j) are not required to be marked with a RIN. Variation from the marking requirement may be approved on written request to the Associate Administrator for Hazardous Materials Safety (DHM-32).

(8) *Recordkeeping.* A retester shall maintain the following records at the retesting location, on paper or in a form from which a paper copy can be produced on request.

(i) Records of authority to inspect, retest and mark must be maintained, as follows:

(A) Current RIN issuance letter;

(B) If the RIN has expired and renewal is pending, a copy of the renewal application; and

(C) Copies of notifications to RSPA required under paragraph (e)(2)(iv) of this section.

(ii) Daily records of visual inspection and hydrostatic retest must be maintained in chronological order for five years. A single date may be used for each retest sheet, provided each retest on the sheet was conducted on that date. Ditto marks or a solid vertical line may be used to indicate repetition of the preceding entry for the following entries: date, dimensions, manufacturer, owner, and retest operator. Blank spaces may not be used to indicate repetition. Records must include:

(A) For each test to demonstrate calibration, the date; serial number of the calibrated cylinder; calibration test pressure; total, elastic and permanent expansions; and legible identification of retest operator. Calibrations must be recorded on the same sheets as, and in chronological order with, retest records for that date;

(B) For each cylinder retested or visually inspected, records containing the date; serial number; ICC/DOT specification or exemption number; service pressure; dimensions; manufacturer (name or symbol); owner; result of visual inspection; test pressure; total, elastic and permanent expansions; percent permanent expansion; disposition, with reason for retest, rejection or condemnation; and legible

identification of test operator. For each cylinder marked pursuant to § 173.302(c)(5), the retest sheet must indicate the method by which average and maximum wall stresses were computed. Records must be kept for all completed retests, as well as unsuccessful retests under paragraph (e)(4)(v) of this section. The entry for a later retest under paragraph (e)(4)(v) of this section after a failure to hold test pressure, or retest of a cylinder requalified after rejection, must indicate the date of the earlier inspection or retest; and

(C) Calculations of average and maximum wall stress pursuant to § 173.302(c)(3), if performed.

(iii) The most recent certificate of calibration must be maintained for each calibrated cylinder used by the retester.

(9) A cylinder in chlorine or sulfur dioxide service made before April 20, 1915, must be retested at 500 psi.

(10) A DOT 4-series cylinder that at any time shows evidence of a leak or of internal or external corrosion, denting, bulging or rough usage to the extent that it is likely to be weakened appreciably; or that has lost five percent or more of its official tare weight; must be retested before being recharged and shipped. (Refer to CGA Pamphlet C-6 or C-6.1, as applicable, regarding cylinder weakening). After retest, the actual tare weight must be recorded as the new tare weight.

(11) A cylinder of 12 pounds or less water capacity authorized for service pressure of 300 psi or less may be hydrostatically retested without a water jacket and without determining total and permanent expansions. The retest is successful if the cylinder, when examined under test pressure, does not display a defect described in paragraph (e)(6)(i)(B) or (C) of this section.

(12) A cylinder made in compliance with specification DOT 4B, DOT 4BA, DOT 4BW, DOT 4E or ICC-26-300¹ (§§ 178.50, 178.51, 178.61, 178.68 of this subchapter) that is used exclusively for anhydrous dimethylamine; anhydrous methylamine; anhydrous trimethylamine; methyl chloride; liquefied petroleum gas; methylacetylene-propadiene stabilized; or dichlorodifluoromethane, difluoroethane, difluorochloroethane, chlorodifluoromethane, chlorotetrafluoroethane, trifluorochloroethylene, or mixture thereof, or mixtures of one or more with trichlorofluoromethane; and that is commercially free from corroding components and protected externally by

a suitable corrosion resistant coating (such as galvanizing or painting) may be retested every 10 years (see Note 2) instead of every five years.

Alternatively, the cylinder may be subjected to internal hydrostatic pressure of at least two times the marked service pressure without determination of expansions (see Note 1), but this latter type of test must be repeated every five years after expiration of the first 10-year period (see Note 2). When subjected to the latter test, the cylinder must be carefully examined under test pressure and removed from service if a leak or other harmful defect exists.

Note 1: A cylinder requalified by the modified hydrostatic test method or external inspection must be marked after a retest or an inspection by stamping the date of retest or reinspection on the cylinder followed by the symbol "E" (external inspection) or "S" (modified hydrostatic test method) as appropriate.

Note 2: Until further order of the Department, the 10-year retest period may be extended to 12 years, and the five-year retest period may be extended to seven years after expiration of the first 12-year period.

(13) A cylinder made in conformance with a specification listed in the table in this paragraph (e)(13) and used exclusively in the service indicated may, instead of a periodic hydrostatic retest, be given a complete external visual inspection at the time periodic retest becomes due. External visual inspection in accordance with CGA Pamphlets C-6 or C-6.1, as applicable, in addition to the other requirements of this section, meets the requirement for visual inspection. When this inspection is used instead of hydrostatic retesting, subsequent inspections are required at five-year intervals after the first inspection. Inspections shall be made only by competent persons and the results recorded and maintained in accordance with paragraph (e)(8) of this section. Records shall include: Date of inspection (month and year); DOT specification number; cylinder identification (registered symbol and serial number, date of manufacture, and owner); type of cylinder protective coating (including statement as to need of refinishing or recoating); conditions checked (e.g., leakage, corrosion, gouges, dents or digs in shell or heads, broken or damaged footing or protective ring or fire damage); disposition of cylinder (returned to service, to cylinder manufacturer for repairs or scrapped). A cylinder that passes inspection shall be marked with the date in accordance with paragraph (e)(7) of this section. An "E" after the date indicates requalification by the

¹ Use of existing cylinders authorized; new construction not authorized.

external inspection method.

Specification cylinders must be in exclusive service as follows:

Cylinders made in compliance with—	Used exclusively for—
DOT-4, DOT-3A, DOT-3AA, DOT-3A480X, DOT-4A, DOT-4AA480	Anhydrous ammonia of at least 99.95% purity.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, ICC-26-240, ¹ ICC-26-300 ¹ .	Butadiene, inhibited, which is commercially free from corroding components.
DOT-3A, DOT-3A480X, DOT-3AA, DOT-3B, DOT-4A, DOT-4AA480, DOT-4B, DOT-4BA, DOT-4BW.	Cyclopropane which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E	Fluorinated hydrocarbons and mixtures thereof which are commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E, ICC-26-240, ¹ ICC-26-300 ¹ .	Liquefied hydrocarbon gas which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3A480X, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E, ICC-26-240, ¹ ICC-26-300 ¹ .	Liquefied petroleum gas which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW, DOT-4E	Methylacetylene-propadiene, stabilized, which is commercially free from corroding components.
DOT-3A, DOT-3AA, DOT-3B, DOT-4B, DOT-4BA, DOT-4BW	Anhydrous mono, di, trimethylamines which are commercially free from corroding components.
DOT-4B240, DOT-4BW240	Ethyleneimine, inhibited.

¹ Use of existing cylinders authorized; new construction not authorized.

(14) A cylinder made in compliance with specification DOT-3A, DOT-3A480X, or DOT-4AA480 used exclusively for anhydrous ammonia, commercially free from corroding components, and protected externally by a suitable corrosion resistant coating (such as painting) may be retested every 10 years instead of every five years.

(15) A cylinder not exceeding two inches outside diameter and less than 2 feet in length is exempted from hydrostatic retest.

(16) In addition to the other requirements of this section, a cylinder marked DOT-3HT must be requalified in accordance with CGA Pamphlet C-8 and the following:

(i) At least once every three years, the cylinder must be subjected to a test by hydrostatic pressure in a water jacket to determine elastic expansion.

(ii) The cylinder must be condemned:

(A) If elastic expansion exceeds the marked rejection elastic expansion (REE). A cylinder made before January 17, 1978, and not marked with an REE in cubic centimeters near the marked original elastic expansion must be so marked before the next retest date. The REE for a cylinder is 1.05 times its original elastic expansion.

(B) If there is evidence of denting or bulging.

(C) Twenty-four years after the date of the original test or after 4,380 pressurizations, whichever occurs first. If a cylinder is recharged, on average, more than once every other day, an accurate record of the number of rechargings must be maintained by the cylinder owner or his agent.

(iii) The retest date and RIN must be applied by low-stress steel stamp to a depth no greater than that of the marking at the time of manufacture.

Stamping on the sidewall is not authorized.

(17) A cylinder made in conformance with specification DOT-3A, DOT-3AA, DOT-3B, DOT-4A, DOT-4BA or DOT-4BW (§§ 178.36, 178.37, 178.38, 178.49, 178.51, 178.61 of this chapter) having a service pressure of 300 psi or less that is used exclusively for methyl bromide, liquid; mixtures of methyl bromide and ethylene dibromide, liquid; mixtures of methyl bromide and chlorpicrin, liquid; mixtures of methyl bromide and petroleum solvents, liquid; or methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid; that is commercially free of corroding components, and that is protected externally by a suitable corrosion resistant coating (such as galvanizing or painting) and internally by a suitable corrosion resistant lining (such as galvanizing) may be tested every 10 years instead of every five years, provided that a visual internal and external examination of the cylinder is conducted every five years in accordance with CGA Pamphlet C-6. The cylinder must be examined at each filling, and rejected if a dent, corroded area, leak or other condition indicates possible weakness.

(18) A cylinder made in conformance with specification DOT-3A or 3AA, that has a water capacity not exceeding 125 pounds and that is removed from any cluster, bank, group, rack, or vehicle each time it is filled, may be retested every 10 years instead of every five years, provided:

(i) The cylinder was manufactured after December 31, 1945;

(ii) The cylinder is used exclusively for air, argon, cyclopropane, ethylene, helium, hydrogen, krypton, neon, nitrogen, nitrous oxide, oxygen, sulfur

hexafluoride, xenon, permitted mixtures of these gases (see § 173.301(a)) and permitted mixtures of these gases with up to 30 percent by volume of carbon dioxide, provided that the gas has a dew point at or below minus 52 °F. at 1 atmosphere;

(iii) Before each refill, the cylinder passes the hammer test specified in CGA Pamphlet C-6;

(iv) If since the last required hydrostatic retest the cylinder has not been used exclusively as specified in paragraph (e)(18)(ii) of this section, it currently conforms to the requirements of paragraphs (e)(18) (i) and (iii) of this section and has been retested under, and meets the criteria prescribed by, § 173.302(c) (2), (3) and (4);

(v) Each cylinder is stamped with a five-point star at least one-fourth of an inch high immediately following the test date. If a cylinder marked with the star is used other than as specified in this paragraph (e)(18), the star following the most recent test date must be obliterated and the cylinder must be tested every five years;

(vi) The cylinder is dried immediately after hydrostatic testing to remove all traces of free water; and

(vii) The cylinder is not used for underwater breathing.

(19)(i) A cylinder that previously contained a Class 8 (corrosive) material may not be used to transport a compressed gas in commerce unless the following requirements are met:

(A) The cylinder is visually inspected, internally and externally, in accordance with CGA Pamphlet C-6;

(B) Regardless of the date of previous retest, the cylinder is subjected to and passes inspection and hydrostatic retest in accordance with this section; and

(C) The record prescribed in paragraph (e)(8) of this section includes: the month and year of inspection and test; the cylinder identification (including ICC or DOT specification number, registered symbol, serial number, date of manufacture and owner); the conditions checked (e.g., leakage, corrosion, gouges, dents, or digs in shell or heads, broken or damaged footings, fire damage) and the

disposition of the cylinder (returned to service, returned to the manufacturer for repairs, or scrapped).

(ii) A cylinder requalified for compressed gas service in accordance with this paragraph (e)(19) may have its next retest and inspection scheduled from the date of the inspection and retest prescribed in this paragraph (e). If decontamination cannot remove all significant residue or impregnation by

the Class 8 material, the cylinder may not be used to transport compressed gas in commerce.

(20) *DOT 8 and 8AL cylinders.* (i) Each owner of a DOT 8 or 8AL cylinder used to transport acetylene must have the cylinder shell and the porous filler requalified in accordance with CGA Pamphlet C-13. Requalification must be performed in accordance with the following schedule:

Date of cylinder manufacture	Shell (visual inspection) requalification		Porous filler requalification	
	Initial	Subsequent	Initial	Subsequent
Before January 1, 1991	Before January 1, 2001	10 yrs.	Before January 1, 2011	Not required.
On or after January 1, 1991	10 yrs. ¹	10 yrs.	3 to 20 yrs. ²	Not required.

¹ Years from date of cylinder manufacture.

² For a cylinder manufactured on or after January 1, 1991, requalification of the porous filler must be performed no sooner than 3 years, and no later than 20 years, from the date of manufacture.

(ii) Unless requalified and marked in accordance with CGA Pamphlet C-13 before October 1, 1994, an acetylene cylinder must be requalified by a person who holds a valid RIN. Each cylinder successfully passing a shell or filler requalification must be marked with the retester's RIN in accordance with paragraph (e)(7) of this section. In addition, the cylinder must be marked to identify the type of requalification performed in accordance with paragraph 4.8 of CGA Pamphlet C-13. For example, the letter "S" must be used for a shell requalification and the letter "F" for a porous filler requalification.

(iii) If a cylinder valve is replaced, a cylinder valve of the same weight must be used or the tare weight of the cylinder must be adjusted to compensate for valve weight differential.

(21) A DOT specification 4B, 4BA, 4B240ET or 4BW (§§ 178.50, 178.51, 178.55 and 178.61 of this subchapter) cylinder used as a fire extinguisher may be retested in accordance with requirements contained in this paragraph (e)(21), subject to the following conditions:

(i) The cylinder is used exclusively as a fire extinguisher and contains fire extinguishing agents such as ammonium phosphate, sodium bicarbonate, potassium bicarbonate, potassium imido dicarboxamide and bromochlorodifluoromethane or bromotrifluoromethane that are commercially free from corroding components. The extinguishing agents must be expelled by gases that are nonflammable, non-poisonous, and noncorrosive as defined under this subchapter.

(ii) As part of the periodic retest, the retester must perform an external and

internal visual inspection in accordance with CGA Pamphlet C-6. The cylinder must be carefully examined while under test pressure. A cylinder that passes hydrostatic retest using a water jacket method must be marked in accordance with paragraph (e)(7) of this section or, if using the modified hydrostatic test method, with the month and year of retest followed by the letter "S". A retest must be performed 12 years after the original test date and subsequent retests must be as follows: At a seven-year interval if the modified hydrostatic test was last performed or at a 12-year interval if the water jacket method was last used.

* * * * *

6. In § 173.301, paragraph (j) would be revised to read as follows:

§ 173.301 General requirements for shipment of compressed gases in cylinders.¹

* * * * *

(j) *Charging of foreign cylinders for export.* (1) A cylinder manufactured outside the United States that has not been manufactured, inspected, tested and marked in accordance with part 178 of this subchapter may be charged with compressed gas in the United States, and shipped, only for export. It may be charged and shipped for export only if it meets the following requirements, in addition to other requirements of the subchapter:

(i) It has been inspected, tested and marked in conformance with the procedures and requirements of § 173.34(e); and

(ii) It meets the maximum filling density and service pressure requirements of this part.

¹ Requirements covering cylinders are also applicable to spherical pressure vessels.

(2) The bill of lading or other shipping paper must identify the cylinder and carry the following certification: "This cylinder has [These cylinders have] been retested and refilled in accordance with DOT requirements for export."

* * * * *

7. In § 173.302, in paragraph (c)(3), the text preceding the table and the value for "K" in Note 1 following the table would be revised, and Note 3 would be added, to read as follows:

§ 173.302 Charging of cylinders with non-liquefied compressed gases.

* * * * *

(c) * * *

(3) That neither the average wall stress nor the maximum wall stress exceeds the wall stress limitation shown in the following table (see Notes 1, 2 and 3):

* * * * *

Note 1: * * *

K=factor x 10⁻⁷, experimentally determined for the particular type of cylinder being tested, or derived in accordance with CGA Pamphlet C-5;

* * * * *

Note 3: Compliance with average wall stress limitation may be determined through computation of the elastic expansion rejection limit in accordance with CGA Pamphlet C-5.

* * * * *

8. In § 173.309, paragraph (b) would be revised to read as follows:

§ 173.309 Fire extinguishers.

* * * * *

(b) Specification 3A, 3AA, 3E, 3AL, 4B, 4BA, 4B240ET or 4BW (§§ 178.36, 178.37, 178.42, 178.46, 178.50, 178.51, 178.55 and 178.61 of this subchapter) cylinders.

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Alan I. Roberts,

Associate Administrator for Hazardous Materials Safety.

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